STN - Structure Search 9-7-04

=> d ibib abs hitstr

L4 ANSWER 1 OF 1 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2004:182672 CAPLUS
DOCUMENT NUMBER: 140:235910
TITLE: Preparation of tricyclic cannabinoid compounds and their therapeutic use
INVENTOR(S): Makriyannis, Alexandros; Lu, Dai; Lai, Xin-Zhong
PATENT ASSIGNEE(S): University of Connecticut, USA
SOURCE: PCT Int. Appl., 85 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

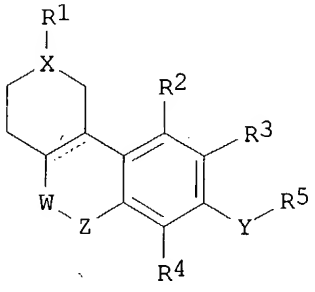
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004017922	A2	20040304	WO 2003-US26609	20030825
WO 2004017922	A3	20040624		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ

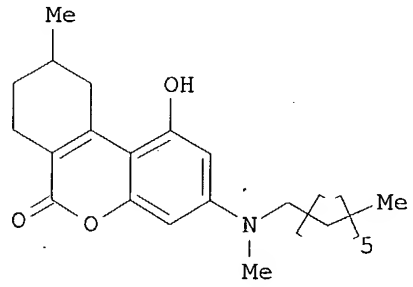
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2002-405608P P 20020823
US 2002-405940P P 20020826

OTHER SOURCE(S): MARPAT 140:235910
GI



I



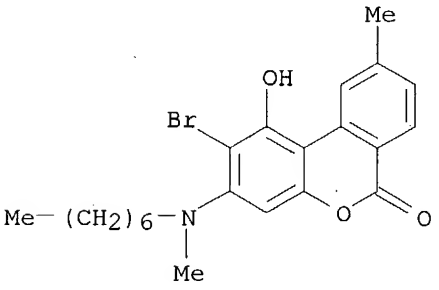
II

AB Novel tricyclic cannabinoid compds., such as I [R1 = H, alkyl, halogen, N3, NCS, CN, NO2, NH-alkyl; R2 = H, OH, OMe, halogen, amino, acylamino; R3 = H, OH, halogen, CN, N3, alkylamino; R4 = H, OH, halo, CN, N3, NCS, alkylamino; R5 = alkyl, carbocycle, heterocycle; W = CO, CS, C:CH2; X = CH, N, S, O, SO, SO2; Y = O, S, NH, N-alkyl, N:N, C:C, C.tplbond.C; Z = O, S, NH, N-alkyl], were prepd and tested for CB1 and CB2 receptor binding activity. Some of the prepared cannabinoid compds. exhibit fluorescence properties. The fluorescent cannabinoid compds. are typically endogenously fluorescent. Some of these compds., when administered in a

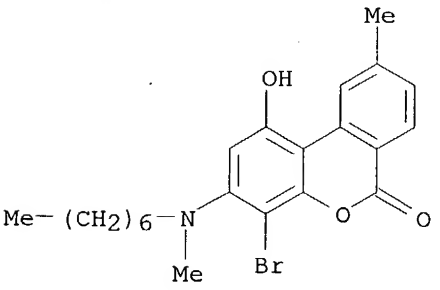
therapeutically effective amount to an individual or animal, result in a sufficiently high level of that compound in the individual or animal to cause a physiol. response to treat a number of physiol. conditions, such as pain, peripheral pain, glaucoma, epilepsy, nausea, such as associated with cancer chemotherapy, AIDS Wasting Syndrome, cancer, neurodegenerative diseases, including Multiple Sclerosis, Parkinson's Disease, Huntington's Chorea and Alzheimer's Disease, and can also be used to enhance appetite, to reduce fertility, to prevent or reduce diseases associated with motor function such as Tourette's syndrome, to provide neuroprotection, to produce peripheral vasodilation and to suppress memory. Thus, cannabinoid compound II was prepared via a multistep synthetic sequence starting from 3,5-dimethoxy-aniline, iodomethane, 1-bromo-heptane and 4-methyl-2-oxo-cyclohexanecarboxylic acid Et ester. Binding affinities of II for CB1 and CB2 receptors were 122 nM and 128 nM resp.

IT **666827-88-9P 666827-89-0P 666827-90-3P**
666827-91-4P
RL: PAC (Pharmacological activity); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of tricyclic cannabinoid compds. and their therapeutic use)

RN 666827-88-9 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 2-bromo-3-(heptylmethylamino)-1-hydroxy-9-methyl- (9CI) (CA INDEX NAME)

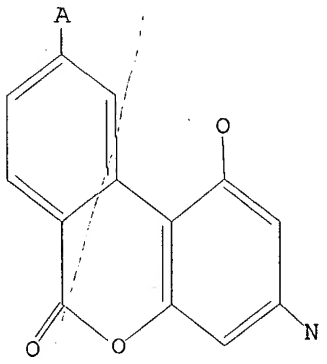


RN 666827-89-0 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 4-bromo-3-(heptylmethylamino)-1-hydroxy-9-methyl- (9CI) (CA INDEX NAME)



RN 666827-90-3 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 3-(heptylmethylamino)-1-hydroxy-9-(trifluoromethyl)- (9CI) (CA INDEX NAME)

=> d l1
L1 HAS NO ANSWERS
L1 STR



Structure attributes must be viewed using STN Express query preparation.

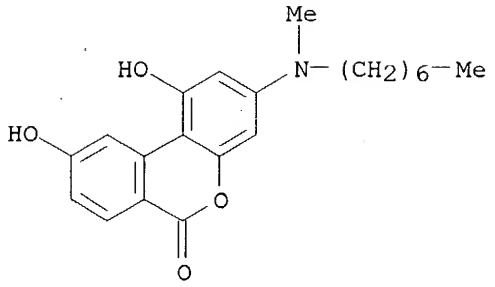
=> => d ibib abs hitstr 1-27

L8 ANSWER 1 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2004:182672 CAPLUS
DOCUMENT NUMBER: 140:235910
TITLE: Preparation of tricyclic cannabinoid compounds and their therapeutic use
INVENTOR(S): Makriyannis, Alexandros; Lu, Dai; Lai, Xin-Zhong
PATENT ASSIGNEE(S): University of Connecticut, USA
SOURCE: PCT Int. Appl., 85 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

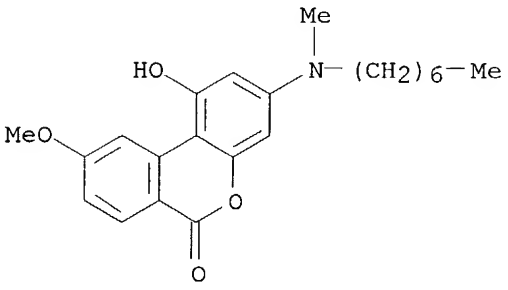
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004017922	A2	20040304	WO 2003-US26609	20030825
WO 2004017922	A3	20040624		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2002-405608P P 20020823
US 2002-405940P P 20020826
OTHER SOURCE(S): MARPAT 140:235910
GI



RN 666827-96-9 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 3-(heptylmethylamino)-1-hydroxy-9-methoxy- (9CI) (CA INDEX NAME)

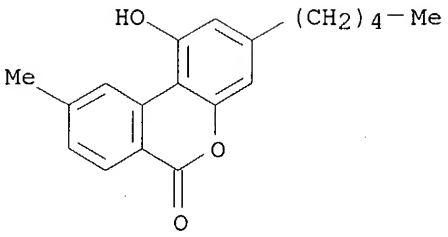


L8 ANSWER 2 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:807792 CAPLUS
DOCUMENT NUMBER: 140:391166
TITLE: Product class 4: benzopyranones and benzopyranthiones
AUTHOR(S): Williams, A. C.; Camp, N.
CORPORATE SOURCE: Germany
SOURCE: Science of Synthesis (2003), 14, 347-638
CODEN: SSCYJ9
PUBLISHER: Georg Thieme Verlag
DOCUMENT TYPE: Journal; General Review
LANGUAGE: English

AB A review. Methods for preparing 2H-1-benzopyran-2-ones, 4H-1-benzopyran-4-ones, 1H-2-benzopyran-1-ones, 6H-dibenzo[b,d]pyran-6-ones, 9H-xanthenones and their corresponding thione analogs as well as 3H-2-benzopyran-3-ones are surveyed. Synthetic methods include ring closure, ring transformation, aromatization and substituent modification reactions.

IT **63839-83-8P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(review of preparation of benzopyranones and benzopyranthiones via ring closure, ring transformations, aromatization and substituent modifications)

RN 63839-83-8 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



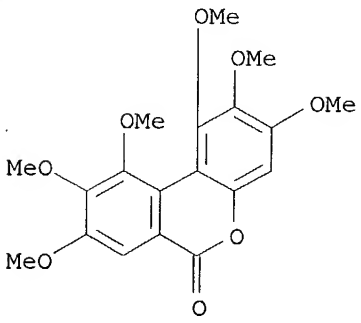
REFERENCE COUNT: 1083 THERE ARE 1083 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 3 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2003:657090 CAPLUS
DOCUMENT NUMBER: 139:350571
TITLE: Total Synthesis of (+)-Isoschizandrin Utilizing a Samarium(II) Iodide-Promoted 8-Endo Ketyl-Olefin Cyclization
AUTHOR(S): Molander, Gary A.; George, Kelly M.; Monovich, Lauren G.
CORPORATE SOURCE: Roy and Diana Vagelos Laboratories, Department of Chemistry, University of Pennsylvania Philadelphia, Philadelphia, PA, 19104-6323, USA
SOURCE: Journal of Organic Chemistry (2003), 68(25), 9533-9540
CODEN: JOCEAH; ISSN: 0022-3263
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 139:350571

AB The thirteen-step synthesis of (+)-isoschizandrin reported herein features a samarium(II) iodide-promoted 8-endo ketyl-olefin coupling to assemble the eight-membered ring present in the target concomitantly with the required functionality and stereochem. In constructing (+)-isoschizandrin as a single atropisomer, the synthesis utilizes a kinetic resolution of a seven-membered lactone using a CBS-oxazaborolidine.

IT **611233-67-1P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(synthesis of (+)-Isoschizandrin via samarium(II) iodide-promoted 8-endo ketyl-olefin cyclization)

RN 611233-67-1 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,2,3,8,9,10-hexamethoxy- (9CI) (CA INDEX NAME)



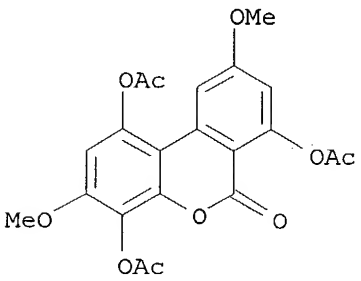
REFERENCE COUNT: 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 4 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:934736 CAPLUS
DOCUMENT NUMBER: 139:49574
TITLE: 6H-Dibenzo[b,d]pyran-6-one derivatives from the cultured lichen mycobionts of Graphis spp. and their biosynthetic origin
AUTHOR(S): Tanahashi, Takao; Takenaka, Yukiko; Nagakura, Naotaka; Hamada, Nobuo
CORPORATE SOURCE: Kobe Pharmaceutical University, 4-19-1, Motoyamakita-machi, Higashinada-ku, Kobe, 658-8558, Japan
SOURCE: Phytochemistry (Elsevier) (2003), 62(1), 71-75
CODEN: PYTCAS; ISSN: 0031-9422
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The spore-derived mycobionts of the lichen Graphis prunicola, G. cognata, and G. scripta were cultivated on a malt-yeast extract medium supplemented with 10% sucrose and their metabolites were investigated. Graphislactones A-D were isolated from the cultures of G. prunicola, while alternariol and graphislactones A and C were isolated from those of G. cognata. From the cultured mycobionts of G. scripta, a new 6H-dibenzo[b,d]pyran-6-one derivative, graphislactone E, with graphislactones A and C was obtained. On the other hand, cultivation of the mycobionts of G. prunicola on a malt-yeast extract medium supplemented with 2.5% sucrose and 0.25% NaOAc produced 2 new metabolites, graphislactones E and F. Their structures were determined by spectroscopic methods. The biogenetic origin of the C skeleton in both compds. was verified by administering Na [1-13C]-acetate and Na [1,2-13C2]-acetate.

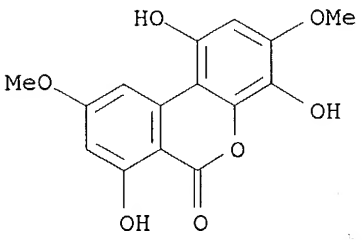
IT **548463-70-3**
RL: BSU (Biological study, unclassified); NPO (Natural product occurrence); BIOL (Biological study); OCCU (Occurrence)
(6H-dibenzo[b,d]pyran-6-one derivs. from the cultured lichen mycobionts of Graphis spp. and their biosynthetic origin)

RN 548463-70-3 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,4,7-tris(acetyloxy)-3,9-dimethoxy- (9CI) (CA INDEX NAME)

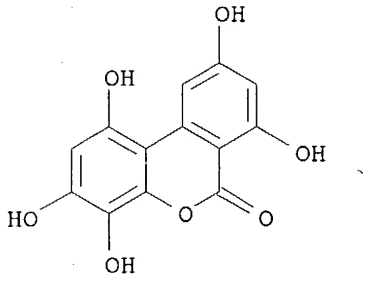


IT **548484-77-1P**, Graphislactone E **548484-78-2P**, Graphislactone F
RL: BSU (Biological study, unclassified); NPO (Natural product occurrence); PUR (Purification or recovery); BIOL (Biological study); OCCU (Occurrence); PREP (Preparation)
(6H-dibenzo[b,d]pyran-6-one derivs. from the cultured lichen mycobionts of Graphis spp. and their biosynthetic origin)

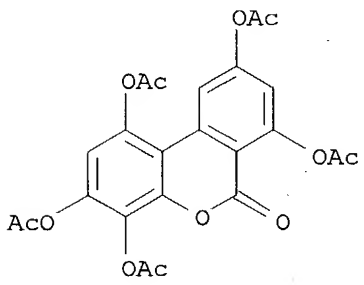
RN 548484-77-1 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,4,7-trihydroxy-3,9-dimethoxy- (9CI) (CA INDEX NAME)



RN 548484-78-2 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,3,4,7,9-pentahydroxy- (9CI) (CA INDEX NAME)



IT **548463-71-4**
RL: PRP (Properties)
(6H-dibenzo[b,d]pyran-6-one derivs. from the cultured lichen mycobionts of Graphis spp. and their biosynthetic origin)
RN 548463-71-4 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,3,4,7,9-pentakis(acetyloxy)- (9CI) (CA INDEX NAME)



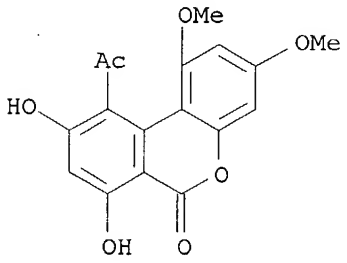
REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 5 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2002:226446 CAPLUS
DOCUMENT NUMBER: 137:109183
TITLE: Nucleophilic addition reactions on 3-carbethoxy-5,7-dimethoxycoumarin
AUTHOR(S): Hassan, M. A.; Shiba, S. A.; Harb, N. S.;

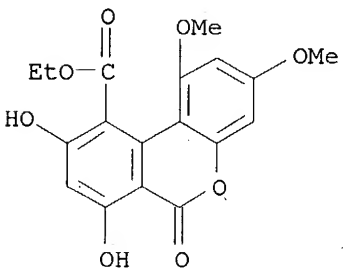
Abou-El-Regal, M. K.; El-Metwally, S. A.
CORPORATE SOURCE: Chemistry Department, Faculty of Science, Ain Shams University, Cairo, Egypt
SOURCE: Synthetic Communications (2002), 32(5), 679-688
CODEN: SYNCAV; ISSN: 0039-7911
PUBLISHER: Marcel Dekker, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 137:109183
AB 5,7-Dimethoxy-2-oxo-2H-1-benzopyran-3-carboxylic acid Et ester [i.e., 3-carbethoxy-5,7-dimethoxycoumarin, (I)] underwent Michael addition and addition-cyclization of some active methylene compds. under different reaction conditions to give adducts. Addition of phenylmagnesium bromide to I yielded a tertiary alc. Addition of ammonia derivs. to I afforded 3-carboxamides and azine derivs. Furthermore, alcoholysis and hydrolysis gave coumarins derivs.

IT **443306-69-2P 443306-70-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and nucleophilic addition of 5,7-dimethoxy-2-oxo-2H-1-benzopyran-3-carboxylic acid Et ester)

RN 443306-69-2 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 10-acetyl-7,9-dihydroxy-1,3-dimethoxy- (9CI) (CA INDEX NAME)



RN 443306-70-5 CAPLUS
CN 6H-Dibenzo[b,d]pyran-10-carboxylic acid, 7,9-dihydroxy-1,3-dimethoxy-6-oxo-, ethyl ester (9CI) (CA INDEX NAME)



REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 6 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 2001:300425 CAPLUS
DOCUMENT NUMBER: 134:305318
TITLE: Dibenzopyranone derivative peripheral cannabinoid

receptor (CB2) selective ligands, their preparation, and their therapeutic use

INVENTOR(S): Makriyannis, Alexandros; Khanolkar, Almaram
PATENT ASSIGNEE(S): University of Connecticut, USA

SOURCE: PCT Int. Appl., 33 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001028329	A1	20010426	WO 2000-US28818	20001018
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
EP 1223808	A1	20020724	EP 2000-973642	20001018
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
JP 2003511469	T2	20030325	JP 2001-530934	20001018

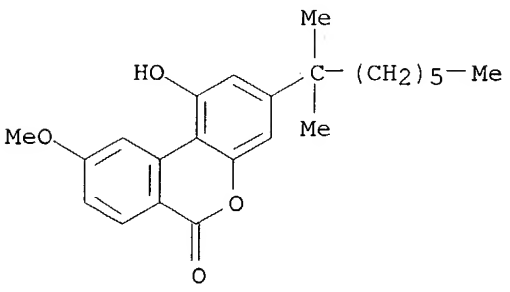
PRIORITY APPLN. INFO.: US 1999-160146P P 19991018
WO 2000-US28818 W 20001018

OTHER SOURCE(S): MARPAT 134:305318

AB Polycyclic cannabinoid analogs are presented which have preferentially high affinities for the cannabinoid CB2 receptor sites. The improved receptor affinity makes these analogs therapeutically useful as medications in individuals and animals for treatment of pain, glaucoma, epilepsy, nausea associated with chemotherapy.

IT **335371-36-3P**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); RCT (Reactant); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(dibenzopyranone derivative peripheral cannabinoid receptor (CB2) selective ligands, preparation, and therapeutic use)

RN 335371-36-3 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 3-(1,1-dimethylheptyl)-1-hydroxy-9-methoxy- (9CI) (CA INDEX NAME)

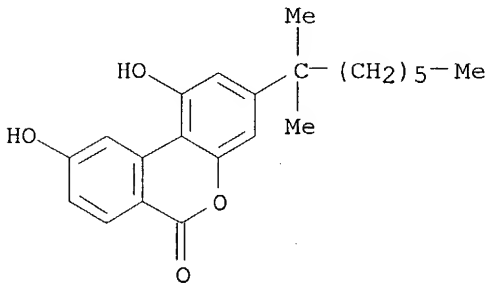


IT **335371-37-4P**
RL: BAC (Biological activity or effector, except adverse); BSU (Biological

study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(dibenzopyranone derivative peripheral cannabinoid receptor (CB2) selective ligands, preparation, and therapeutic use)

RN 335371-37-4 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 3-(1,1-dimethylheptyl)-1,9-dihydroxy- (9CI) (CA INDEX NAME)

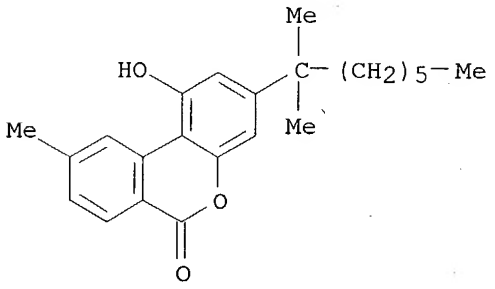


IT **194714-93-7P**

RL: SPN (Synthetic preparation); PREP (Preparation)
(dibenzopyranone derivative peripheral cannabinoid receptor (CB2) selective ligands, preparation, and therapeutic use)

RN 194714-93-7 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 3-(1,1-dimethylheptyl)-1-hydroxy-9-methyl- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 7 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 2000:124139 CAPLUS

DOCUMENT NUMBER: 132:260391

TITLE: Hyaluronidase inhibitory active 6H-dibenzo[b,d]pyran-6-ones from the feces of Trogopterus xanthipes

AUTHOR(S): Jeong, Sei-Joon; Kim, Na-Young; Kim, Do-Hoon; Kang, Tai-Hyun; Ahn, Nyeon-Hyung; Miyamoto, T.; Higuchi, R.; Kim, Youn-Chul

CORPORATE SOURCE: College Pharmacy, Wonkwang Univ., Iksan, 570749, S. Korea

SOURCE: Planta Medica (2000), 66(1), 76-77
CODEN: PLMEAA; ISSN: 0032-0943

PUBLISHER: Georg Thieme Verlag

DOCUMENT TYPE: Journal

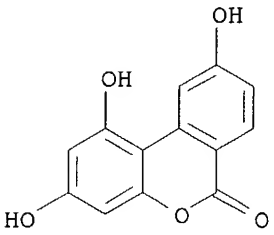
LANGUAGE: English

AB In an attempt to isolate hyaluronidase inhibitors for the development of

antiallergic agents from Korean crude drugs, a bioassay-guided fractionation of the MeOH extract of Pteropi feces (the feces of Trogopterus xanthipes) provided 3 hyaluronidase inhibitory active 6H-dibenzo[b,d]-pyran-6-ones, together with a new compound, 3,8,10-tri-hydroxy-6H-dibenzo[b,d]pyran-6-one. Their structures were established on the basis of the spectroscopic methods. Three dibenzopyranone compds. showed hyaluronidase inhibitory activities with IC50 of 1.33, 1.07, and 2.33 mM, resp., compared to 1.78 mM for disodium cromoglycate, an antiallergic agent, as a pos. control.

IT **263272-89-5P**
RL: ANT (Analyte); PRP (Properties); PUR (Purification or recovery); ANST (Analytical study); PREP (Preparation)
(hyaluronidase inhibitory active dibenzopyranones from feces of Trogopterus xanthipes as antiallergic agents)

RN 263272-89-5 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,3,9-trihydroxy- (9CI) (CA INDEX NAME)



REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L8 ANSWER 8 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1999:244072 CAPLUS
DOCUMENT NUMBER: 131:5167
TITLE: A reinvestigation of bicarbonate induced oligomerization of ethyl acetoacetate: one-pot biomimetic synthesis of dimethylcoumarin, trimethylcoumarin and condensed coumarin derivatives
AUTHOR(S): Talapatra, Sunil Kumar; Pal, Pijus; Biswas, Kallolmay; Shaw, Arun; Chakrabarti, Ramaprasad; Talapatra, Bani
CORPORATE SOURCE: Centre of Advanced Studies on Natural Products, Department of Chemistry, University College of Science, Calcutta, 700 009, India
SOURCE: Journal of the Indian Chemical Society (1998), 75(10-12), 590-597
CODEN: JICSAH; ISSN: 0019-4522
PUBLISHER: Indian Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 131:5167
GI

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB Et acetoacetate undergoes biomimetic condensation and cyclocondensation reactions with sodium bicarbonate as a base to give a variety of novel coumarin derivs. not easily prepared by other routes. In addition to coumarins such as I (R = EtO2C; R1 = Me; R2 = MeCO) and II, formed in 12% and 1.0%

yields, resp., the unusual tetrahydrofuranodihydronaphthopyrone III was isolated in 0.1% yield and tentatively identified by NMR. I was converted upon heating at 130° in concentrated sulfuric acid to I (R = HO2C; R1 = Me; R2 = H) and I (R = R2 = H; R1 = Me), both in 40% yield. Methylation of I (R = HO2C; R1 = Me; R2 = H) with diazomethane in di-Et ether-methanol gave I (R = MeO2C; R1 = Me; R2 = H). Oxidation of I (R = EtO2C, MeO2C, H; R1 = Me; R2 = H) with SeO2 in dioxane gave mixture of the aldehydes I (R = EtO2C, MeO2C, H; R1 = OHC; R2 = H) in 35-40% yields and the corresponding alcs. I (R = EtO2C, MeO2C, H; R1 = HOCH2; R2 = H) in 20-30% yields. A pyranopyrandione, originally proposed by Talapatra, Basak, Matti, and Talapatra (Indian J. Chemical, Sec. B, 1980) to have structure IV, was shown to have structure V (R3 = H) based on 13C NMR (SFORD and APT) and a crystal structure of its bromo derivative V (R3 = Br).

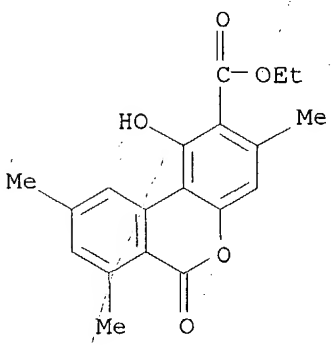
IT **225778-99-4P**

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of bicyclic and tricyclic coumarin derivs. by biomimetic condensation and cyclocondensation of Et acetoacetate in the presence of sodium bicarbonate)

RN 225778-99-4 CAPLUS

CN 6H-Dibenzo[b,d]pyran-2-carboxylic acid, 1-hydroxy-3,7,9-trimethyl-6-oxo-, ethyl ester (9CI) (CA INDEX NAME)



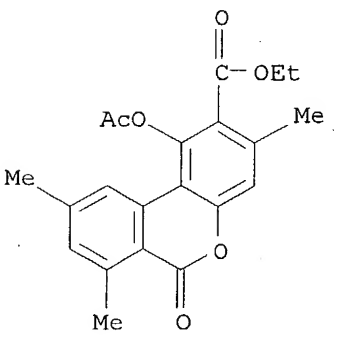
IT **225779-11-3P**

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation of bicyclic and tricyclic coumarin derivs. by biomimetic condensation and cyclocondensation of Et acetoacetate in the presence of sodium bicarbonate)

RN 225779-11-3 CAPLUS

CN 6H-Dibenzo[b,d]pyran-2-carboxylic acid, 1-(acetyloxy)-3,7,9-trimethyl-6-oxo-, ethyl ester (9CI) (CA INDEX NAME)

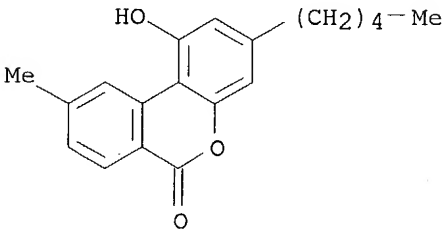


REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

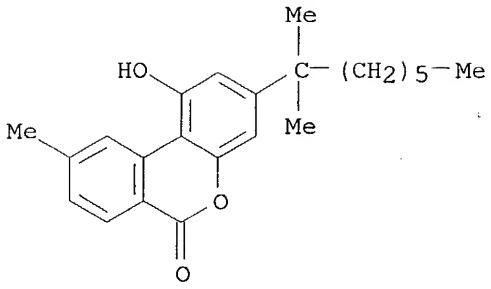
L8 ANSWER 9 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1997:603226 CAPLUS
DOCUMENT NUMBER: 127:199606
TITLE: Cannabinol Derivatives: Binding to Cannabinoid Receptors and Inhibition of Adenylylcyclase
AUTHOR(S): Rhee, Man-Hee; Vogel, Zvi; Barg, Jacob; Bayewitch, Michael; Levy, Rivka; Hanus, Lumir; Breuer, Aviva; Mechoulam, Raphael
CORPORATE SOURCE: Department of Neurobiology, Weizmann Institute of Science, Rehovot, 76100, Israel
SOURCE: Journal of Medicinal Chemistry (1997), 40(20), 3228-3233
CODEN: JMCMAR; ISSN: 0022-2623
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Several derivs. of cannabinol and the 1,1-dimethylheptyl homolog (DMH) of cannabinol were prepared and assayed for binding to the brain and the peripheral cannabinoid receptors (CB1 and CB2), as well as for activation of CB1- and CB2-mediated inhibition of adenylylcyclase. The DMH derivs. were much more potent than the pentyl (i.e., cannabinol) derivs. 11-Hydroxycannabinol was found to bind potently to both CB1 and CB2 (Ki values of 38.0 and 26.6 nM, resp.) and to inhibit CB1-mediated adenylylcyclase with an EC50 of 58.1 nM but to cause only 20% inhibition of CB2-mediated adenylylcyclase at 10 mM. It behaves as a specific, though not potent, CB2 antagonist. 11-Hydroxycannabinol-DMH is a very potent agonist for both CB1 and CB2 (Ki values of 100 and 200 pM; EC50 of adenylylcyclase inhibition 56.2 and 207.5 pM, resp.).

IT **63839-83-8**
RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)
(preparation and structure-activity relations of cannabinoids and binding to CB1- and CB2-receptors)
RN 63839-83-8 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



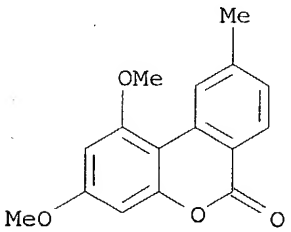
IT **194714-93-7P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and structure-activity relations of cannabinoids and binding to CB1- and CB2-receptors)
RN 194714-93-7 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 3-(1,1-dimethylheptyl)-1-hydroxy-9-methyl- (9CI) (CA INDEX NAME)



L8 ANSWER 10 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1995:731162 CAPLUS
DOCUMENT NUMBER: 123:169395
TITLE: Synthesis of toddacoumaquinone, a coumarin-naphthoquinone dimer, and its antiviral activities
AUTHOR(S): Ishikawa, Tsutomu; Kotake, Ken-ichiro; Ishii, Hisashi
CORPORATE SOURCE: Fac. Pharmaceutical Sciences, Chiba Univ., Chiba, 263, Japan
SOURCE: Chemical & Pharmaceutical Bulletin (1995), 43(6), 1039-41
CODEN: CPBTAL; ISSN: 0009-2363
PUBLISHER: Pharmaceutical Society of Japan
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 123:169395

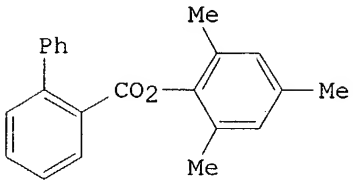
AB Toddacoumaquinone, a coumarin-naphthoquinone dimer, was synthesized through Diels-Alder reaction between 8-(1-acetoxy-3-methyl-1,3-butadienyl)-5,7-dimethoxycoumarin and 2-methoxy-1,4-benzoquinione. The activities of toddacoumaquinone against several viruses were examined A weak activity (EC50 = 10 μg/mL) was observed against HSV-1 and HSV-2, but no activity was seen against HIV-1.

IT **31573-19-0P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(synthesis and antiviral activities of toddacoumaquinone)
RN 31573-19-0 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,3-dimethoxy-9-methyl- (8CI, 9CI) (CA INDEX NAME)



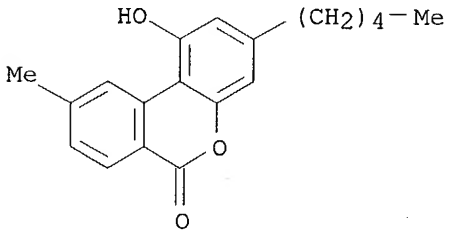
L8 ANSWER 11 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1994:216865 CAPLUS
DOCUMENT NUMBER: 120:216865
TITLE: Convenient synthesis of biphenyl-2-carboxylic acids via the nucleophilic aromatic substitution reaction of 2-methoxybenzoates with aryl Grignard reagents
AUTHOR(S): Hattori, Tetsutaro; Suzuki, Takatsugu; Hayashizaka,

Noriyuki; Koike, Nobuyuki; Miyano, Sotaro
CORPORATE SOURCE: Fac. Eng., Tohoku Univ., Sendai, 980, Japan
SOURCE: Bulletin of the Chemical Society of Japan (1993), 66(10), 3034-40
CODEN: BCSJA8; ISSN: 0009-2673
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 120:216865
GI



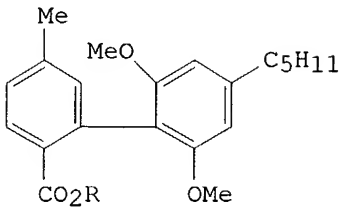
I

AB Nucleophilic aromatic substitution (SNAr) of 2-methoxybenzoic esters derived from 2,6-dialkylphenols by aryl Grignard reagents affords 1,1'-biphenyl-2-carboxylates, e.g., I, in excellent yields by proper choice of the bulk of the 2,6-dialkyl-substituents. The phenoxyl protecting groups can be easily removed from the resulting biphenyl-2-carboxylates to the free acids. The regioselective biphenyl coupling reaction via the SNAr process is utilized for the key-step construction of the biphenyl skeleton in a formal synthesis of cannabinol.
IT **63839-83-8P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 63839-83-8 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



L8 ANSWER 12 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1992:105763 CAPLUS
DOCUMENT NUMBER: 116:105763
TITLE: A practical and efficient method for the construction of the biphenyl framework; nucleophilic aromatic substitution on 2-methoxybenzoates with aryl Grignard reagents
AUTHOR(S): Hattori, Tetsutaro; Suzuki, Takatsugu; Miyano, Sotaro
CORPORATE SOURCE: Fac. Eng., Tohoku Univ., Sendai, 980, Japan
SOURCE: Journal of the Chemical Society, Chemical Communications (1991), (19), 1375-6
CODEN: JCCCAT; ISSN: 0022-4936
DOCUMENT TYPE: Journal

LANGUAGE: English
OTHER SOURCE(S): CASREACT 116:105763
GI



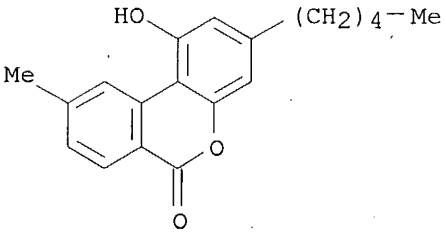
I

AB Treatment of 2-methoxybenzoic esters derived from 2,6-dialkylphenols with aryl Grignard reagents afforded 1,1'-biphenyl-2-carboxylates in excellent yields. E.g., SNAr reaction of 2,4-(MeO)MeC6H3CO2R [R = 2,6,4(Me3C)2MeC6H2] with 2,6,4-(MeO)2(C5H11)C6H2MgBr gave biphenyl derivative I (same R) which was converted in 2 steps to cannabinol.

IT **63839-83-8P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and conversion of, to cannabinol)

RN 63839-83-8 CAPLUS

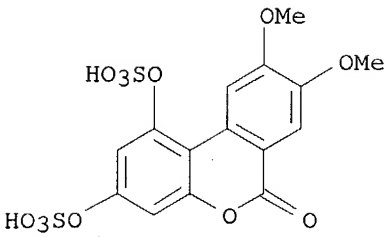
CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



L8 ANSWER 13 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1991:679813 CAPLUS
DOCUMENT NUMBER: 115:279813
TITLE: Preparation of 6H-dibenzo[b,d]pyran-6-ones and their use as aldose reductase inhibitors
INVENTOR(S): Nakayama, Hajime; Ishikura, Masatoshi; Ueda, Yutaka; Imai, Kunihiro; Terajima, Megumi; Suzui, Akio
PATENT ASSIGNEE(S): Toyo Pharmar Co., Ltd., Japan; Daiso Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

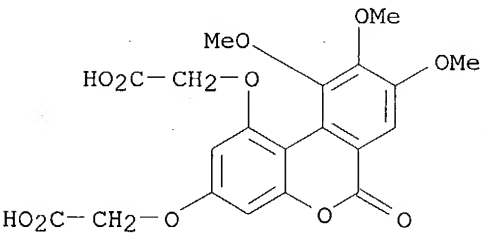
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 02304080	A2	19901217	JP 1989-123537	19890517
PRIORITY APPLN. INFO.:			JP 1989-123537	19890517

OTHER SOURCE(S): MARPAT 115:279813
GI

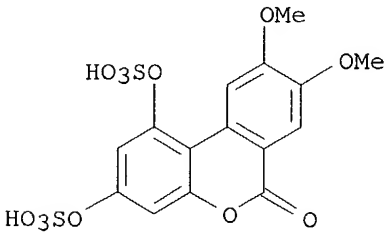


●2 NH_3

RN 133540-78-0 CAPLUS
CN Acetic acid, 2,2'-[(8,9,10-trimethoxy-6-oxo-6H-dibenzo[b,d]pyran-1,3-diyl)bis(oxy)]bis- (9CI) (CA INDEX NAME)



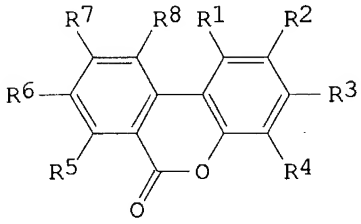
RN 133540-84-8 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 8,9-dimethoxy-1,3-bis(sulfooxy)- (9CI) (CA INDEX NAME)



L8 ANSWER 14 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1990:178673 CAPLUS
DOCUMENT NUMBER: 112:178673
TITLE: Preparation of 6H-dibenzo[b,d]pyran-6-one derivatives as aldose reductase inhibitors
INVENTOR(S): Nakayama, Hajime; Ishikura, Masatoshi; Ueda, Yutaka; Imai, Kunihiro; Terajima, Megumi; Suzui, Akio
PATENT ASSIGNEE(S): Toyo Pharmar Co., Ltd., Japan; Daiso Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01250373	A2	19891005	JP 1988-80610	19880331
PRIORITY APPLN. INFO.:			JP 1988-80610	19880331
OTHER SOURCE(S):	MARPAT 112:178673			

GI



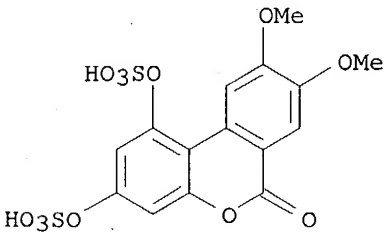
I

AB The title compds. [I; R1-R8 = H, alkyl, alkoxy, OSO3M wherein M = H, alkali metal, NH4; OP(O)(OM)2, OCH2CO2M], useful as aldose reductase inhibitors in treating diabetes complications, are prepared ClSO3H (0.02 mol) was added to anhydrous pyridine under cooling, 0.01 mol 3-hydroxy derivative I (R3 = OH, others = H) was added, and the solution refluxed, concentrated, cooled, and treated with KOH to pH 8 to give 1.95 g sulfonate salt I (R3 = OSO3K, others = H). Similarly prepared were 18 addnl. I which showed 50-98% inhibition of aldose reductase at 1 + 10-6 M by the Kadoa method.

IT **126438-43-5P 126438-44-6P 126438-45-7P**
126438-46-8P 126438-47-9P 126438-48-0P
126438-51-5P 126438-54-8P
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); SPN (Synthetic preparation); THU (Therapeutic use); BIOL (Biological study); PREP (Preparation); USES (Uses)
(preparation of, as aldose reductase inhibitor)

RN 126438-43-5 CAPLUS

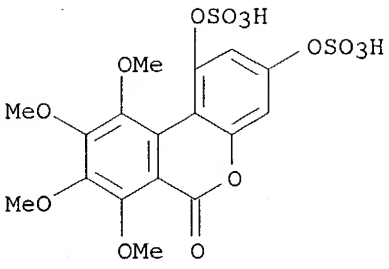
CN 6H-Dibenzo[b,d]pyran-6-one, 8,9-dimethoxy-1,3-bis(sulfooxy)-, dipotassium salt (9CI) (CA INDEX NAME)



●2 K

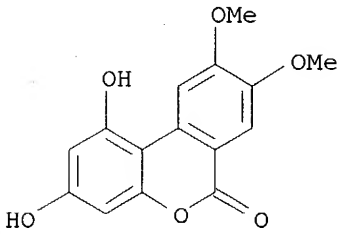
RN 126438-44-6 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 8,9-dimethoxy-1,3-bis(sulfooxy)-, disodium salt (9CI) (CA INDEX NAME)

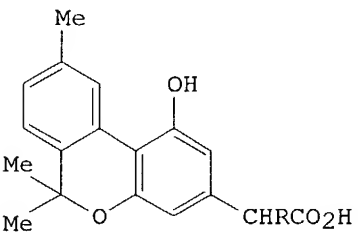


●2 K

IT **126438-36-6**
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction of, in preparation of aldose reductase inhibitors)
RN 126438-36-6 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,3-dihydroxy-8,9-dimethoxy- (9CI) (CA INDEX NAME)



L8 ANSWER 15 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1986:168629 CAPLUS
DOCUMENT NUMBER: 104:168629
TITLE: Synthesis of C-3 side-chain carboxylic acid cannabinoid derivatives
AUTHOR(S): Borne, Ronald F.; Mauldin, Scott C.
CORPORATE SOURCE: Dep. Med. Chem., Univ. Mississippi, University, MS, 38677, USA
SOURCE: Journal of Heterocyclic Chemistry (1985), 22(3), 693-6
CODEN: JHTCAD; ISSN: 0022-152X
DOCUMENT TYPE: Journal
LANGUAGE: English
OTHER SOURCE(S): CASREACT 104:168629
GI



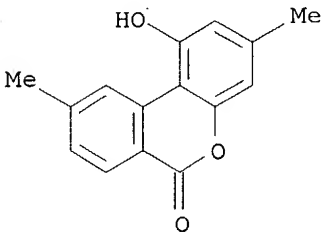
I

AB Based upon the structural similarities of cannabinoid derivs., which inhibit the biosynthesis of prostaglandins, with those of the potent inhibitor indomethacin, cannabinoid derivs. I (R = H, Me) possessing C-3 side-chain carboxylic acid function, were prepared

IT **101479-09-8P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 101479-09-8 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-3,9-dimethyl- (9CI) (CA INDEX NAME)



L8 ANSWER 16 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1984:454785 CAPLUS

DOCUMENT NUMBER: 101:54785

TITLE: Cannabis. Part 29. Synthesis of four benzofuro[6,7-c][2]benzopyrans related to cannabinol

AUTHOR(S): Novak, Jiri; Salemink, Cornelis A.

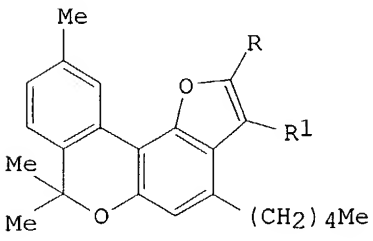
CORPORATE SOURCE: Lab. Org. Chem., State Univ., Utrecht, Neth.

SOURCE: Journal of the Chemical Society, Perkin Transactions 1: Organic and Bio-Organic Chemistry (1972-1999) (1984), (4), 729-32
CODEN: JCPRB4; ISSN: 0300-922X

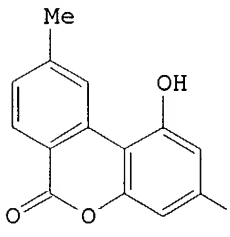
DOCUMENT TYPE: Journal

LANGUAGE: English

GI



I

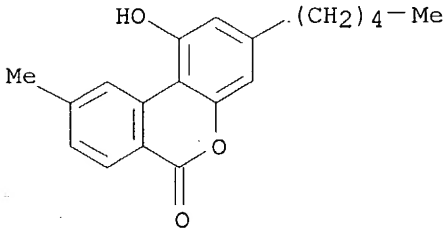


VI

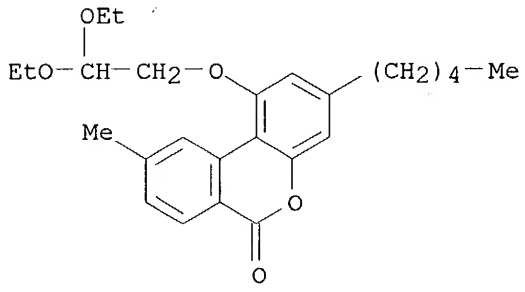
AB Cannabinoids I (R = H, Me, Et, R1 = H; R = R1 = Me) (II-V) were prepared from lactone VI. The structures of 2 of 3 benzofuro[3,2-b][1]benzopyrans, II and III, recently isolated from cannabis resin smoke (D. P. Papadakis, et al.; 1983), were confirmed. The proposed structure of the 3rd furan, V, is incorrect; IV is now proposed as the structure of this cannabinoid. II was prepared from VI by condensation with BrCH2CH(OEt)2, followed by sequential hydrolysis, intramol. cyclocondensation, Grignard methylation-ring cleavage, and intramol. cyclocondensation. V was prepared similarly from VI and MeCHClCOMe. Lithiation of II followed by treatment

with MeI and EtI gave III and IV, resp.

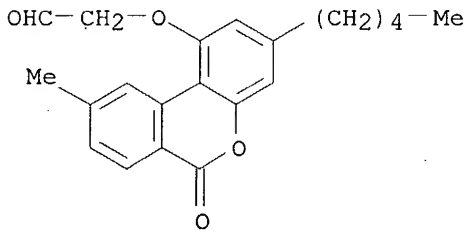
IT **63839-83-8**
RL: RCT (Reactant); RACT (Reactant or reagent)
(condensation reactions of, with bromoacetaldehyde di-Et acetal and chlorobutanone)
RN 63839-83-8 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



IT **91022-18-3P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and hydrolysis of)
RN 91022-18-3 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1-(2,2-diethoxyethoxy)-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)

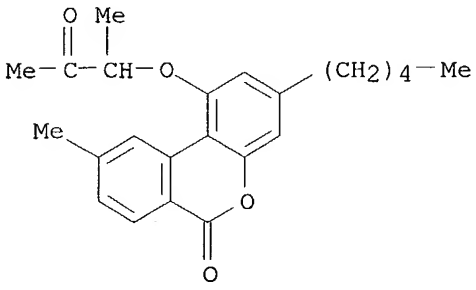


IT **91022-19-4P 91022-23-0P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and intramol. cyclocondensation reaction of)
RN 91022-19-4 CAPLUS
CN Acetaldehyde, [(9-methyl-6-oxo-3-pentyl-6H-dibenzo[b,d]pyran-1-yl)oxy]- (9CI) (CA INDEX NAME)

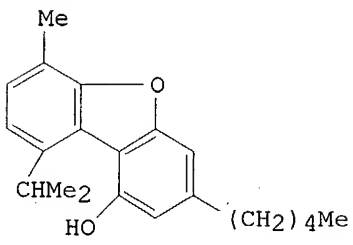


RN 91022-23-0 CAPLUS

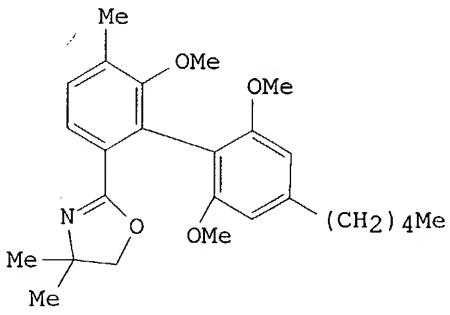
CN 6H-Dibenzo[b,d]pyran-6-one, 9-methyl-1-(1-methyl-2-oxopropoxy)-3-pentyl- (9CI) (CA INDEX NAME)



L8 ANSWER 17 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1984:138829 CAPLUS
DOCUMENT NUMBER: 100:138829
TITLE: Cannabis. Part 28. A new route to the synthesis of cannabifuran
AUTHOR(S): Novak, Jiri; Salemink, Cornelis A.
CORPORATE SOURCE: Lab. Org. Chem., State Univ. Utrecht, Utrecht, Neth.
SOURCE: Journal of the Chemical Society, Perkin Transactions 1: Organic and Bio-Organic Chemistry (1972-1999) (1983), (12), 2873-7
CODEN: JCPRB4; ISSN: 0300-922X
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



I

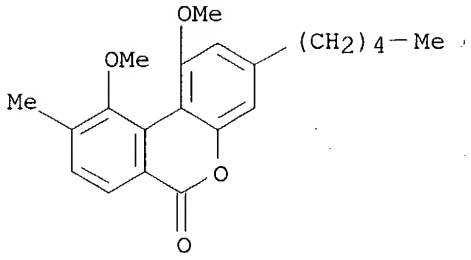


II

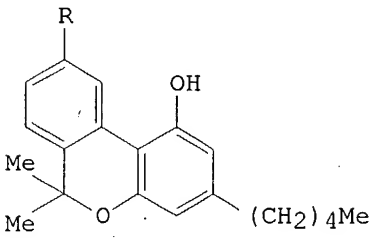
AB Cannabifuran (I) was prepared in 6 steps from dihydrooxazole II, the preparation of which has been reported (1983). The final step was cyclization of 2,5,6-(Me2CH)Me(MeO)C6H2C6H2(OMe)2[(CH2)4Me]-2,6,4 with aqueous HI in refluxing Ac2O for 5 h to give 90% I. Improved yields (87 and 88%) of 2,6-(MeO)2C6H3Ph were obtained by the Ni complex-catalyzed cross-Grignard reactions of 1,3-(MeO)2C6H3I-2 with BrPh and 1,3-(MeO)2C6H3Br-2 with PhI.

IT **86253-88-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

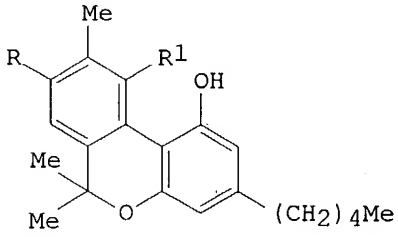
RN 86253-88-5 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,10-dimethoxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



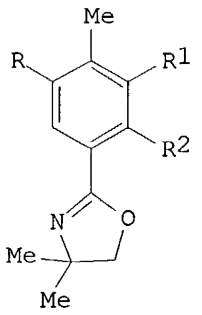
L8 ANSWER 18 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1984:138828 CAPLUS
DOCUMENT NUMBER: 100:138828
TITLE: Cannabis. Part 27. Synthesis of 8-, 10-, and 11-oxygenated cannabinols
AUTHOR(S): Novak, Jiri; Salemink, Cornelis A.
CORPORATE SOURCE: Lab. Org. Chem., State Univ. Utrecht, Utrecht, Neth.
SOURCE: Journal of the Chemical Society, Perkin Transactions 1: Organic and Bio-Organic Chemistry (1972-1999) (1983), (12), 2867-71
CODEN: JCPRB4; ISSN: 0300-922X
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



I



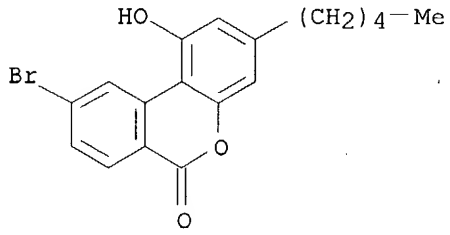
IV



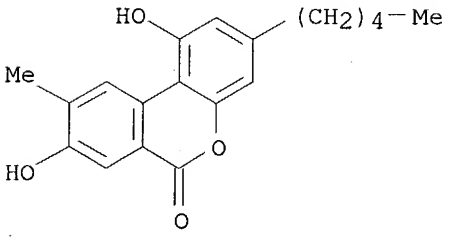
V

AB Carboxylic acid I (R = CO2H) (II) was prepared in 8 steps from 2,4-HOBrC6H3COMe. Reduction of II with LiAlH4 gave 11-hydroxycannabinol (I; R = CH2OH) (III). II and III are metabolites of cannabinol in man. I (R = CHO), prepared by oxidation of III, and IV (R = OH, R1 = H; R = H, R1 = OH) prepared analogously from 2,5,4- and 2,3,4-(MeO)2MeC6H2CO2H, resp., are possible cannabinol metabolites. In each preparation the key step was the regiospecific Grignard reaction of aryldihydrooxazoles V (R = R1 = H; R ≠ R1 = H, OMe; R2 = OMe) with 3,5,4-(MeO)2BrC6H2(CH2)4Me to give V [R, R1 as before, R2 = C6H2(OMe)2(CH2)4Me-2,6,4].

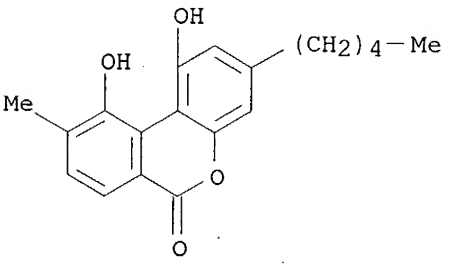
IT **89368-14-9P 89368-18-3P 89368-20-7P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and Grignard methylation and ring cleavage of)
RN 89368-14-9 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 9-bromo-1-hydroxy-3-pentyl- (9CI) (CA INDEX NAME)



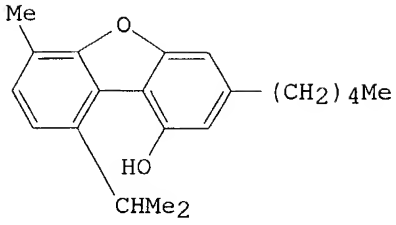
RN 89368-18-3 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,8-dihydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



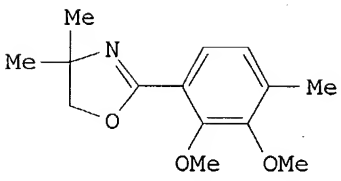
RN 89368-20-7 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,10-dihydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



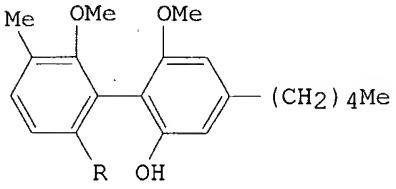
L8 ANSWER 19 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1983:422201 CAPLUS
DOCUMENT NUMBER: 99:22201
TITLE: Cannabis. XXVI. Total synthesis of cannabifuran
AUTHOR(S): Novak, J.; Salemink, C. A.
CORPORATE SOURCE: Lab. Org. Chem., State Univ. Utrecht, Utrecht, Neth.
SOURCE: Tetrahedron Letters (1983), 24(1), 101-2
CODEN: TELEAY; ISSN: 0040-4039
DOCUMENT TYPE: Journal
LANGUAGE: English
GI



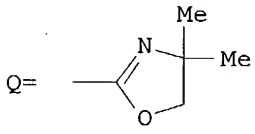
I



III



IV

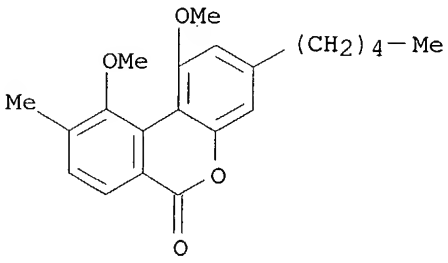


AB The title dibenzofuran (I) was prepared by a multistep method from 4,2,3-Me(MeO)2C6H2CO2H and 4,3,5-Br(HO)2C6H2(CH2)4Me (II). The key step was the Grignard reaction of the oxazoline III with II in refluxing THF for 22 h to give 83% biphenyloxazoline IV (R = Q). Cyclization of the biphenyl IV (R = CHMe2) in refluxing Ac2O containing HI for 5 h gave 90% I.

IT **86253-88-5P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 86253-88-5 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 1,10-dimethoxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



L8 ANSWER 20 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1982:406042 CAPLUS

DOCUMENT NUMBER: 97:6042

TITLE: Cannabis. XXIV. A new convenient synthesis of cannabinol

AUTHOR(S): Novak, J.; Salemink, C. A.

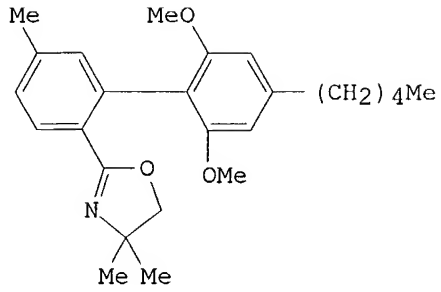
CORPORATE SOURCE: Lab. Org. Chem., State Univ. Utrecht, Utrecht, Neth.

SOURCE: Tetrahedron Letters (1982), 23(2), 253-4
CODEN: TELEAY; ISSN: 0040-4039

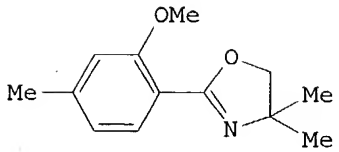
DOCUMENT TYPE: Journal

LANGUAGE: English

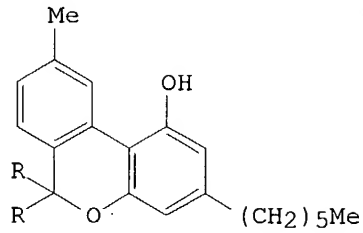
GI



I



II



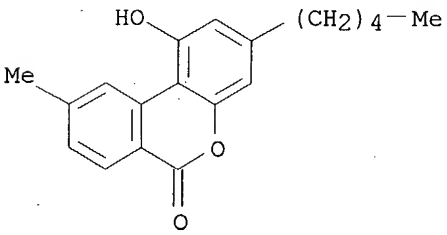
III

AB The biaryloxazoline I, prepared by Grignard reaction of the methoxide II with 4,3,5-Br(MeO)2C6H2(CH2)4Me, was converted to the lactone III (R2 = O) (IV) on treatment with HI/Ac2O. Cannabinol (III; R = Me), a minor constituent of Cannabis sativa, may be obtained from IV by Grignard reaction with MeI followed by acidification, as previously reported (Adams, R., et al., 1940).

IT **63839-83-8P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of, as intermediate in cannabinol preparation)

RN 63839-83-8 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



L8 ANSWER 21 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1977:502442 CAPLUS

DOCUMENT NUMBER: 87:102442

TITLE: Cannabinodiol: conclusive identification and synthesis of a new cannabinoid from Cannabis sativa

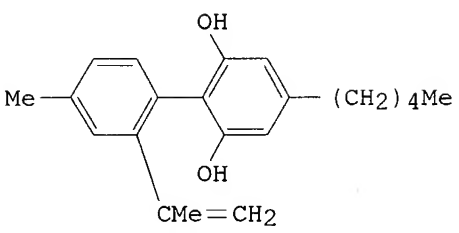
AUTHOR(S): Lousberg, Robert J. J. C.; Bercht, C. A. Ludwig; Van Ooyen, Ronald; Spronck, Hubertus J. W.

CORPORATE SOURCE: Org. Chem. Lab., Univ. Utrecht, Utrecht, Neth.

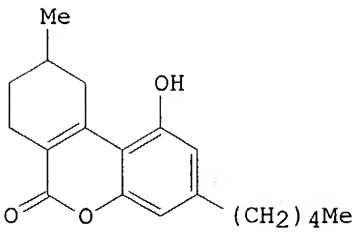
SOURCE: Phytochemistry (Elsevier) (1977), 16(5), 595-7
CODEN: PYTCAS; ISSN: 0031-9422

DOCUMENT TYPE: Journal

LANGUAGE: English
GI



I



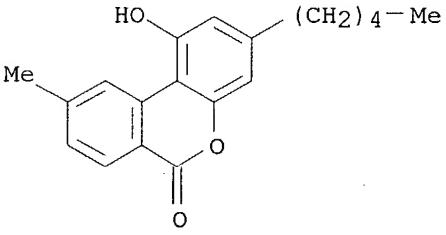
II

AB Cannabinodiol (I) was isolated from C. sativa and its structure determined by synthesis from II and acid-catalyzed conversion into cannabinol.

IT **63839-83-8P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and Grignard reaction with methyl iodide)

RN 63839-83-8 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



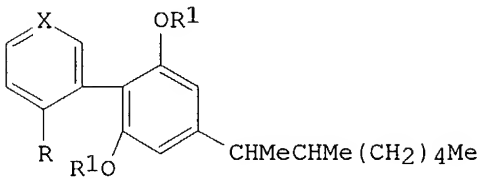
L8 ANSWER 22 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1977:423072 CAPLUS
DOCUMENT NUMBER: 87:23072
TITLE: 2-Substituted-5-alkyl resorcinols
INVENTOR(S): Zaugg, Harold Elmer; Lee, Cheuk Man; Michaels, Raymond John; Plotnikoff, Nicholas Peter
PATENT ASSIGNEE(S): Abbott Laboratories, USA
SOURCE: U.S., 7 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4018777	A	19770419	US 1975-632126	19751114
CA 1090346	A1	19801125	CA 1976-265182	19761108
FR 2361887	B1	19790309	FR 1976-33756	19761109
FR 2361887	A1	19780317		
DK 7605067	A	19770515	DK 1976-5067	19761110
JP 52062254	A2	19770523	JP 1976-134255	19761110
SE 7612620	A	19770515	SE 1976-12620	19761111

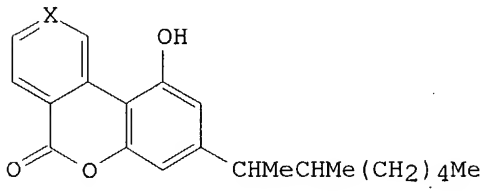
SE 428800	B	19830725		
SE 428800	C	19831103		
FI 7603241	A	19770515	FI 1976-3241	19761111
NL 7612607	A	19770517	NL 1976-12607	19761112
DE 2651708	A1	19770518	DE 1976-2651708	19761112
NO 7603881	A	19770518	NO 1976-3881	19761112
NO 146060	B	19820413		
NO 146060	C	19820804		
GB 1541858	A	19790307	GB 1976-47323	19761112
CH 618427	A	19800731	CH 1976-14310	19761112
AU 7721148	A1	19780713	AU 1977-21148	19770107
AU 511431	B2	19800821		
FR 2397385	A1	19790209	FR 1977-13746	19770505
FR 2397385	B1	19800425		

PRIORITY APPLN. INFO.: US 1975-632126 19751114

GI



I



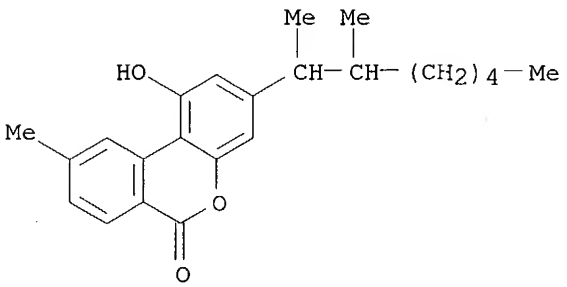
II

AB The title compds. I (X = N, CMe, R = Me2CH, R1 = H), useful as tranquilizers, sedatives, analgesics, and anticonvulsants, were prepared from benzopyranones II by Grignard reaction with MeMgBr, acetylation and dehydration to give I (R = MeC:CH2, R1 = Ac, X = N, CMe), which were hydrogenated and hydrolyzed by NH3.

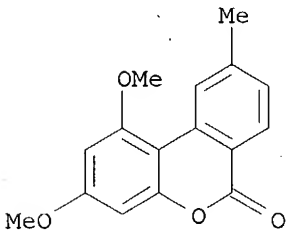
IT **63084-23-1P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)

RN 63084-23-1 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 3-(1,2-dimethylheptyl)-1-hydroxy-9-methyl- (9CI) (CA INDEX NAME)



L8 ANSWER 23 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1971:125035 CAPLUS
DOCUMENT NUMBER: 74:125035
TITLE: Gamboge. V. Synthesis of 2'-isopropyl-5'-methylbiphenyl-2,4,6-triol
AUTHOR(S): Rigby, William
CORPORATE SOURCE: Dep. Org. Chem., Univ. Leeds, Leeds, UK
SOURCE: Journal of the Chemical Society [Section] C: Organic (1971), (4), 765-8
CODEN: JSOOAX; ISSN: 0022-4952
DOCUMENT TYPE: Journal
LANGUAGE: English
GI For diagram(s), see printed CA Issue.
AB The title compound p-cymylphloroglucinol (I), a degradation product of gambogic acid (Hunt, B. J.; Rigby, W., 1970) was synthesized. 2-Bromo-4-methylbenzoic acid reacted with phloroglucinol in alkaline aqueous CuSO4 to give the trihydroxybiphenylcarboxylic acid (II), which reacted with CH2N2 in Et2O-MeOH to give 6 -hydroxy-2 ,4 -dimethoxy-5-methylbiphenylcarboxylic acid lactone (III). Reaction of III with MeMgI gave the tertiary alc. (IV), which was methylated (MeI-K2CO3), and dehydrated (CF3CO2H) to the styrene (V). Hydrogenation (H-PtO2) of V gave the isopropylbiphenyl (VI) which was demethylated (BBr3-Me2Cl2 or boiling Et2O-C5H5N.HCl) to I. IV cyclized to 1,3-dimethoxy-6,6,9-trimethyl-6H-dibenzo[b,d]pyran (VII) in CF3CO2H.
IT **31573-19-0P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation of)
RN 31573-19-0 CAPLUS
CN 6H-Dibenzo[b,d]pyran-6-one, 1,3-dimethoxy-9-methyl- (8CI, 9CI) (CA INDEX NAME)



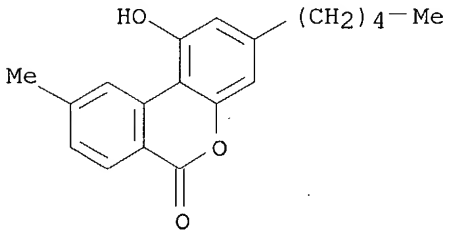
L8 ANSWER 24 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1943:16699 CAPLUS
DOCUMENT NUMBER: 37:16699
ORIGINAL REFERENCE NO.: 37:2727g-i,2728a-b
TITLE: Addition of dienes to certain di-o-methoxy-substituted cinnamic acids. II
AUTHOR(S): Adams, Roger; Carlin, R. B.
SOURCE: Journal of the American Chemical Society (1943), 65, 360-3
CODEN: JACSAT; ISSN: 0002-7863
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
OTHER SOURCE(S): CASREACT 37:16699
AB The work in Part I provides an approach to the synthesis of a tetrahydrocannabinol with a double bond in a position postulated for the

natural product obtained by a rearrangement of cannabidiol with p-MeC6H4SO3H. 4,2,6-Me(MeO)2C6H2CHO (preparation in 31% yield given) and CH2(CO2H)2 with pyridine and piperidine give 98% of 2,6-dimethoxy-4-methylcinnamic acid (I), pale yellow, m. 202° (m. ps. corrected); 1.5 g. I, 3 cc. dimethylbutadiene and 3 cc. xylene, heated at 170° for 30 h., give 0.5 g. of 1,2-dimethyl-4-(2,6-dimethoxy-4-methylphenyl)-1-cyclohexene-5-carboxylic acid, m. 178-80°. The Li derivative from 15 cc. of olivetol di-Me ether gives 78% of 2,6-dimethyl-4-amylbenzaldehyde, b0.3 148-52°, nD20 1.5407; this gives 86% of 2,6-dimethoxy-4-amylcinnamic acid (II), m. 179° (decomposition). II (6.6 g.), 12 cc. 80% isoprene and 12 cc. xylene, heated at 185° for 40 h., give 43% of 2-methyl-5-(2,6-dimethoxy-4-amylphenyl)-1-cyclohexene-4-carboxylic acid (III), m. 133-4°; this experiment could not be repeated; the usual experiment gave 62% of the 1-Me isomer of III, m. 115-15.5°; the Me ester b0.1 170°, nD20 1.5220. By heating the Me ester and S at 240-50° for 45 min. and saponifying with NaOH in 80% EtOH 26% of 2,6-di-methoxy-4-amyl-5'-methyl-2'-carboxybiphenyl, m. 146°, is obtained; demethylation with HBr in AcOH and Ac2O gives 1-hydroxy-3-amyl-9-methyl-6-dibenzopyrone, m. 183-5°.

IT **63839-83-8**, 2-Biphenylcarboxylic acid, 4'-amyl-2',6'-dihydroxy-5-methyl-, δ-lactone
(preparation of)

RN 63839-83-8 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



L8 ANSWER 25 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1940:51700 CAPLUS

DOCUMENT NUMBER: 34:51700

ORIGINAL REFERENCE NO.: 34:7908c-f

TITLE: Structure of cannabinol. VII. A method of synthesis of a tetrahydrocannabinol which possesses marihuana activity

AUTHOR(S): Adams, Roger; Baker, B. R.

SOURCE: Journal of the American Chemical Society (1940), 62, 2405-8
CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

OTHER SOURCE(S): CASREACT 34:51700

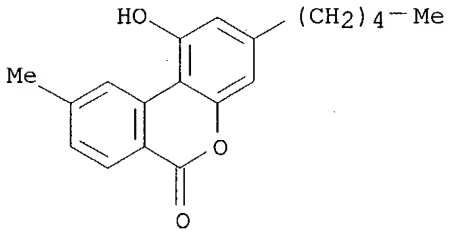
AB Orcinol (6.2 g.), 11 g. of Et cyclohexanone-2-carboxylate and 4.6 g. POCl3 in 45 cc. C6H6, refluxed 3 hrs., give 66% of 1-hydroxy-3-methyl-7,8,9,10-tetrahydro-6-dibenzopyrone (I), m. 243-5° (m. ps. corrected); refluxing with MeI in Et2O-C6H6 for 12 hrs. gives 63% of 1-hydroxy-3,6,6-trimethyl-7,8,9,10-tetrahydro-6-dibenzopyran, m. 136-8°.
5-Methyl-1,3-cyclohexanedione (0.85 g.) with 0.34 g. Na in 10 cc. EtOH, 1.61 g. o-BrC6H4CO2H and 0.05 g. of Cu(OAc)2, refluxed 5 hrs., gives 71% of 1-keto-3-methyl-1,2,3,4-tetrahydro-6-dibenzopyrone (II), m. 148-50°; heating I or II with S at 255-60° gives 83 or 45%

of 1-hydroxy-3-methyl-6-dibenzopyrone, m. 249-51°; Ac derivative, m. 144-6°; the Ac derivative of I, m. 126-7°, is partially deacetylated on heating with S. 1-Hydroxy-3,9-dimethyl-7,8,9,10-tetrahydro-6-dibenzopyrone and MeMgI give 77% of the 3,6,6,9-tetra-Me derivative, m. 115.5-16°. 1-Hydroxy-3-amyl-9-methyl-7,8,9,10-tetrahydro-6-dibenzopyrone and MeMgI give 78% of the 6,6,9-tri-Me derivative b1 191-2°, nD20 1.5549; this compound has a marihuana activity. This establishes that the double bond in tetrahydrocannabinol does not have to be in any fixed position in the left-hand ring and that optical activity is unnecessary in order to have a substance of marihuana activity.

IT **63839-83-8**, 2-Biphenylcarboxylic acid, 4'-amyl-2',6'-dihydroxy-5-methyl-, δ-lactone
(preparation of)

RN 63839-83-8 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



L8 ANSWER 26 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN

ACCESSION NUMBER: 1940:51698 CAPLUS

DOCUMENT NUMBER: 34:51698

ORIGINAL REFERENCE NO.: 34:7908b-c

TITLE: Structure of cannabinol. V. A second method of synthesis of cannabinol

AUTHOR(S): Adams, Roger; Baker, B. R.

SOURCE: Journal of the American Chemical Society (1940), 62, 2401
CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

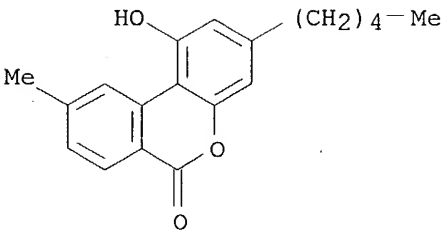
LANGUAGE: Unavailable

AB cf. C. A. 34, 6622.9. Olivetol (4.5 g.), 6 g. Et 5-methylcyclohexanone-2-carboxylate and 4.6 cc. POCl3 in 25 cc. C6H6, refluxed 3 hrs., give 57% of 1-hydroxy-3-amyl-9-methyl-7,8,9,10-tetrahydro-6-dibenzopyrone, m. 180-1° (m. ps. corrected); Ac derivative, m. 82.5-4°; heating with S at 255-60° for 10 min. gives 61% of 1-hydroxy-3-amyl-9-methyl-6-dibenzopyrone, m. 184-5°; MeMgI gives cannabinol.

IT **63839-83-8**, 2-Biphenylcarboxylic acid, 4'-amyl-2',6'-dihydroxy-5-methyl-, δ-lactone
(preparation of)

RN 63839-83-8 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)



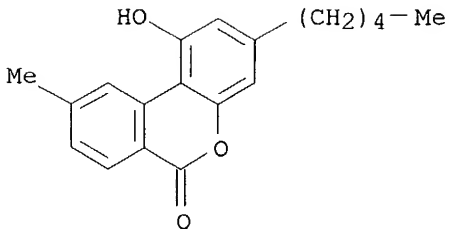
L8 ANSWER 27 OF 27 CAPLUS COPYRIGHT 2004 ACS on STN
ACCESSION NUMBER: 1940:43277 CAPLUS
DOCUMENT NUMBER: 34:43277
ORIGINAL REFERENCE NO.: 34:6622e-h
TITLE: Structure of cannabinol. III. Synthesis of cannabinol, 1-hydroxy-3-amyl-6,6,9-trimethyl-6-dibenzopyran
AUTHOR(S): Adams, Roger; Baker, B. R.; Wearn, R. B.
SOURCE: Journal of the American Chemical Society (1940), 62, 2204-7
CODEN: JACSAT; ISSN: 0002-7863
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable

AB o-BrC6H4CO2H, menthone, EtONa and Cu(OAc)2 in absolute EtOH, refluxed 5 h., give 1-keto-3,3-dimethyl-1,2,3,4-tetrahydro-6-dibenzopyrone, m. 145-6° (m. ps. corrected). Olivetol is reduced by H and Raney Ni at 125° (initial pressure of 2800 lbs.) in about 1 min., giving 70-5% of dihydroodlivetol (5-amyl-1,3-cyclohexanedione) (I), m. 70-1°; a synthesis from AmCHO in 29% is also reported, hexylideneacetone reacting with CH2(CO2Et)2 and EtONa. Condensation of 4,2-MeBrC6H3CO2H and I with EtONa and Cu(OAc)2 gives 78% of 1-keto-3-amyl-9-methyl-1,2,3,4-tetrahydro-6-dibenzopyrone (II), m. 95-6°; heating 10.4 g. II and 1.13 g. S at 250° for 25 min. yields 34% (with 43% recovery of II) of 1-hydroxy-3-amyl-9-methyl-6-dibenzopyrone (III), m. 186°. Reaction of III with MeMgI gives 75% of cannabinol (IV), m. 76-7°. IV was characterized by its Ac derivative, m. 75-6°, its 1-p-nitrobenzoxy derivative, yellow, m. 165-6°, and its 1-m-nitrobenzenesulfonoxy derivative, yellow, m. 127-9°. 5-Ethyl-3-hepten-2-one and CHNa(CO2Et)2 give 5-diethylmethyl-1,3-cyclohexanedione, m. 104-5°; the following compds. were prepared as above: 1-keto-3-diethylmethyl-9-methyl-1,2,3,4-tetrahydro-6-dibenzopyrone, m. 111-12°; 1-hydroxy-3-diethylmethyl-9-methyl-6-dibenzopyrone, m. 217-18° (Ac derivative, m. 128-30°); 1-hydroxy-3-diethylmethyl-6,6,9-trimethyl-6-dibenzopyran, m. 133-4° (Ac derivative, m. 103°; 1-p-nitrobenzoxy derivative, yellow, m. 171°).

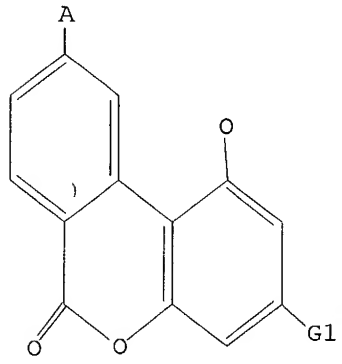
IT **63839-83-8**, 2-Biphenylcarboxylic acid, 4'-amyl-2',6'-dihydroxy-5-methyl-, δ-lactone
(preparation of)

RN 63839-83-8 CAPLUS

CN 6H-Dibenzo[b,d]pyran-6-one, 1-hydroxy-9-methyl-3-pentyl- (9CI) (CA INDEX NAME)




```
=> d his

     (FILE 'HOME' ENTERED AT 11:01:55 ON 07 SEP 2004)

     FILE 'REGISTRY' ENTERED AT 11:02:11 ON 07 SEP 2004
L1             STRUCTURE UPLOADED
L2           0 S L1
L3           8 S L1 FULL

     FILE 'CAPLUS' ENTERED AT 11:03:11 ON 07 SEP 2004
L4           1 S L3

     FILE 'REGISTRY' ENTERED AT 11:03:59 ON 07 SEP 2004
L5             STRUCTURE UPLOADED
L6           1 S L5
L7          55 S L5 FULL

     FILE 'CAPLUS' ENTERED AT 11:05:51 ON 07 SEP 2004
L8          27 S L7

=> d l5
L5 HAS NO ANSWERS
L5              STR
```




```
G1 C,O,N

Structure attributes must be viewed using STN Express query preparation.

=>
```

PALM INTRANET

Day : Tuesday
Date: 9/7/2004
Time: 09:58:47

Inventor Name Search Result

Your Search was:

Last Name = MAKRIYANNIS
First Name = ALEXANDROS

Application#	Patent#	Status	Date Filed	Title	Inventor Name 49
60422383	Not Issued	159	10/30/2002	ANTIPROTOZOAL RING-SUBSTITUTED PHOSPHOLIPIDS	MAKRIYANNIS, ALEXANDROS
60405940	Not Issued	159	08/26/2002	KETO CANNABINOIDS WITH THERAPEUTIC INDICATIONS	MAKRIYANNIS, ALEXANDROS
60405608	Not Issued	159	08/23/2002	NOVEL BIPHENYL CANNABINOIDS	MAKRIYANNIS, ALEXANDROS
60348869	Not Issued	159	10/26/2001	HETEROINDANES: A NEW CLASS OF POTENT CANNABIMIMETIC LIGANDS	MAKRIYANNIS, ALEXANDROS
60316515	Not Issued	159	08/31/2001	NOVEL PYRAZOLE ANALOGS ACTING ON CANNABINOID RECEPTORS	MAKRIYANNIS, ALEXANDROS
60305228	Not Issued	159	07/13/2001	NOVEL BICYCLIC AND TRICYCLIC CANNABINOIDS	MAKRIYANNIS, ALEXANDROS
60264855	Not Issued	159	01/29/2001	RECEPTOR SELECTIVE CANNABIMIMETIC AMINOALKYLINDOLES	MAKRIYANNIS, ALEXANDROS
60264385	Not Issued	159	01/26/2001	NOVEL HETEROCYCLIC CANNABIMIMETIC LIGANDS	MAKRIYANNIS, ALEXANDROS
60160146	Not Issued	159	10/18/1999	PERIPHERAL CANNABINOID RECEPTOR (CB2) SELECTIVE LIGANDS	MAKRIYANNIS , ALEXANDROS
60159997	Not Issued	159	10/18/1999	CANNABIMETRIC INDOLE DERIVATIVES	MAKRIYANNIS , ALEXANDROS
60159993	Not Issued	159	10/18/1999	PYRAZOLE DERIVATIVES AS CANNABINOID	MAKRIYANNIS , ALEXANDROS

				RECEPTOR ANTAGONISTS	
60109615	Not Issued	159	11/24/1998	CANNABIMIMETIC LIPID AMIDES AS USEFUL MEDICATIONS	MAKRIYANNIS , ALEXANDROS
60088568	Not Issued	159	06/09/1998	ANADAMIDE TRANSPORTER INHIBITOR MEDICATIONS	MAKRIYANNIS , ALEXANDROS
60084129	Not Issued	159	05/04/1998	NOVEL CANNABINOIDS SELECTIVE FOR THE CB2 RECEPTOR	MAKRIYANNIS , ALEXANDROS
60084008	Not Issued	159	05/04/1998	NOVEL ANALGESIC AND IMMUNOMODULATORY CANNABINOIDS	MAKRIYANNIS , ALEXANDROS
60058439	Not Issued	159	09/10/1997	NIT GEN HETEROCYCLES AS INHIBITORS OF CANNABINOID RECEPTOR RESPONSE	MAKRIYANNIS , ALEXANDROS
10790498	Not Issued	030	03/01/2004	NOVEL PYRAZOLE ANALOGS ACTING ON CANNABINOID RECEPTORS	MAKRIYANNIS, ALEXANDROS
10647550	Not Issued	030	08/25/2003	NOVEL BIPHENYL AND BIPHENYL-LIKE CANNABINOIDS	MAKRIYANNIS, ALEXANDROS
10647544	Not Issued	071	08/25/2003	KETO CANNABINOIDS WITH THERAPEUTIC INDICATIONS	MAKRIYANNIS, ALEXANDROS
10493093	Not Issued	020	07/02/2004	HETEROINDANES A NEW CLASS OF POTENT CANNABIMIMETIC LIGANDS	MAKRIYANNIS, ALEXANDROS
10483482	Not Issued	020	07/12/2004	NOVEL BICYCLIC AND TRICYCLIC CANNABINOIDS	MAKRIYANNIS, ALEXANDROS
10470359	Not Issued	030	07/25/2003	RECEPTOR SELECTIVE CANNABIMIMETIC AMINOALKYLINDOLES	MAKRIYANNIS, ALEXANDROS
10466403	Not Issued	030	10/31/2003	NOVEL CANNABIMIMETIC LIGANDS	MAKRIYANNIS, ALEXANDROS
10332464	Not Issued	030	01/09/2003	BIFUNCTIONAL AGENTS POSSESSING ANTIOXIDANT AND ANTIARRHYTHMIC ACTIVITY	MAKRIYANNIS, ALEXANDROS
10309686	Not	071	12/04/2002	NOVEL ANALGESIC AND	MAKRIYANNIS,

	Issued			IMMUNOMODULATORY CANNABINOIDS	ALEXANDROS
10250334	Not Issued	030	06/30/2003	GABA A MODULATING NEUROSTEROIDS	MAKRIYANNIS, ALEXANDROS
10111059	Not Issued	092	10/21/2002	CANNABIMIMETIC INDOLE DERIVATIVES	MAKRIYANNIS, ALEXANDROS
10110865	Not Issued	041	10/21/2002	PYRAZOLE DERIVATIVES AS CANNABINOID RECEPTOR ANTAGONISTS	MAKRIYANNIS, ALEXANDROS
10110862	Not Issued	093	10/21/2002	RETRO-ANANDAMIDES, HIGH AFFINITY AND STABILITY CANNABINOID RECEPTOR LIGANDS	MAKRIYANNIS, ALEXANDROS
10110830	Not Issued	041	10/21/2002	PERIPHERAL CANNABINOID RECEPTOR (CB2) SELECTIVE LIGANDS	MAKRIYANNIS, ALEXANDROS
10110812	Not Issued	061	10/21/2002	NOVEL BICYCLIC CANNABINOID AGONISTS FOR THE CANNABINOID RECEPTOR	MAKRIYANNIS, ALEXANDROS
10068588	6579900	150	02/06/2002	NOVEL ANANDAMIDE AMIDASE INHIBITORS AS ANALGESIC AGENTS	MAKRIYANNIS, ALEXANDROS
09701989	Not Issued	161	01/29/2001	INHIBITORS OF THE ANANDAMIDE TRANSPORTER AS ANALGESIC AGENTS	MAKRIYANNIS, ALEXANDROS
09600786	Not Issued	030	07/21/2000	CANNABIMIMETIC LIPID AMIDES AS USEFUL MEDICATIONS	MAKRIYANNIS, ALEXANDROS
09553499	6391909	150	04/20/2000	NOVEL ANADAMIDE INHIBITORS AS ANALGESIC AGENTS	MAKRIYANNIS, ALEXANDROS
09328742	Not Issued	041	06/06/1999	INHIBITORS OF THE ANANDAMIDE TRANSPORTER AS ANALGESIC AGENTS	MAKRIYANNIS , ALEXANDROS
09304720	Not Issued	161	05/04/1999	NOVEL ANALGESIC AND IMMUNOMODULATORY CANNABINOIDS	MAKRIYANNIS , ALEXANDROS
09304718	6166066	150	05/04/1999	NOVEL CANNABINOIDS SELECTIVE FOR THE CB2 RECEPTOR	MAKRIYANNIS , ALEXANDROS
09250717	Not	161	02/16/1999	COMPOSITIONS USEFUL AS	MAKRIYANNIS ,

	Issued			A CANNABINOID RECEPTOR PROBE	ALEXANDROS
09250698	Not Issued	161	02/16/1999	NOVEL ANANDAMIDE AMIDASE INHIBITORS AS ANALGESIC AGENTS	MAKRIYANNIS , ALEXANDROS
09067113	Not Issued	161	04/27/1998	NOVEL PHOSPHOLIPID COMPOUNDS AND USE THEREFOR	MAKRIYANNIS , ALEXANDROS
08967847	5874459	150	11/12/1997	NOVEL ANANDAMIDE AMIDASE INHIBITORS AS ANALGESIC AGENTS	MAKRIYANNIS , ALEXANDROS
08907366	Not Issued	169	08/07/1997	COMPOSITIONS USEFUL AS A CONNABINOID RECEPTOR PROBE	MAKRIYANNIS , ALEXANDROS
08795948	Not Issued	168	02/28/1997	MOVEMENT OF A TEST SUBSTANCE WITHIN A MEMBRANOUS SYSTEM	MAKRIYANNIS , ALEXANDROS
08658949	5688825	150	05/31/1996	NOVEL ANANDAMIDE AMIDASE INHIBITORS AS ANALGESIC AGENTS	MAKRIYANNIS , ALEXANDROS
08596962	5744459	150	02/05/1996	NOVEL PHOSPHOLIPID COMPOUNDS AND USE THEREFOR	MAKRIYANNIS , ALEXANDROS
08512864	5872148	150	08/08/1995	COMPOSITIONS USEFUL AS A CANNABINOID RECEPTOR PROBE	MAKRIYANNIS , ALEXANDROS
08103883	5440052	150	08/06/1993	COMPOSITIONS USEFUL AS A CANNABINOID RECEPTOR PROBE	MAKRIYANNIS , ALEXANDROS
07972138	5489580	150	11/05/1992	NOVEL PHOSPHOLIPID COMPOUNDS AND USE THEREFOR	MAKRIYANNIS , ALEXANDROS

Search and Display More Records.

Search Another: Inventor

Last Name Makriyannis **First Name** Alexandros

Search

To go back use Back button on your browser toolbar.

Back to PALM | ASSIGNMENT | OASIS | Home page